

Chapter 530.5: ENVIRONMENTAL EVALUATION: SURFACE WATERS TOXICS CONTROL PROGRAM

SUMMARY: The surface waters of the State are managed to prevent contamination from toxic pollutants in toxic amounts in order to meet the goals of the Clean Water Act, Maine's Water Classification Program and other water quality laws. Maine water pollution control statutes establish ambient water quality criteria and discharge limits to control the level of toxic pollutants in surface waters. Reduction of surface water toxic pollutants must follow the requirements of Maine's pollution prevention statute (38 M.R.S.A. Section 361-A (3-B) and Chapter 26). The State is also obligated to determine, pursuant to Section 401(a) of the Clean Water Act, as amended, that a discharge proposed for a USEPA-NPDES permit meets State water pollution control standards. USEPA-NPDES rules (40 CFR 122.44(d)) require that water quality based effluent limitations and conditions must be established in a permit when necessary to achieve State water quality standards. This rule sets forth ambient water quality criteria for toxic pollutants and procedures necessary to control levels of toxic pollutants in surface waters.

A. Ambient Water Quality Criteria for Toxic Pollutants

- 1. Narrative Water Quality Criteria.** Except as naturally occurs, surface waters must be free of pollutants in concentrations which impart toxicity and cause those waters to be unsuitable for the existing and designated uses of the waterbody.
- 2. Numerical Water Quality Criteria**
 - a. Statewide Criteria
 - i. Statewide Criteria for toxic pollutants with national water criteria. Except as naturally occurs, levels of toxic pollutants in surface waters must not exceed federal water quality criteria as established by USEPA, pursuant to Section 304(a) of the Clean Water Act, or alternative criteria established below. For any toxic pollutant believed to be carcinogenic, a risk level that would result, at most, in one additional cancer per one million people (risk of 1×10^{-6}) exposed to the carcinogen must be used in determining the human health criterion. Any changes in this risk level for specific carcinogenic substances must be approved by the Board by rule or as part of a waste discharge license proceeding establishing a site-specific criterion.
 - ii. Alternative Statewide Criteria for toxic pollutants with national criteria. Alternative statewide criteria must be adopted through rulemaking and must protect the designated uses of the assigned classification [38 M.R.S.A. Section 420(2)(B)] equally as well as the USEPA criteria. The sponsor of the proposal shall also provide the Department with a thorough literature search of the properties of the toxicant, including but not limited to its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation, and regulation by other states or foreign countries. In addition to the following minimum requirements, the Board may incorporate any other information shown to be pertinent in determining these criteria.

- AA. Aquatic Life Criteria. Minimum requirements for alternative statewide aquatic life criteria include testing as in A(2)(b)(i)(AA) below for all discharges with a significant amount of the pollutant of concern, or the ten discharges with the highest level of the pollutant, whichever is less. The numeric criteria shall be no greater than the lowest safe value found in any of these tests.
- BB. Human Health Criteria. Alternative statewide human health criteria must be established by the Department in consultation with the Department of Human Services on a case by case basis following the general outline specified by USEPA in "Criteria for the Protection of Human Health" (45 Federal Register No. 231 pp.79323-79341, 28 November 1980). The nature of the toxicant, bioaccumulation and human consumption rates are among the factors that must be considered.
- iii. Statewide criteria for toxic pollutants lacking national criteria. The requirements of A(2)(a)(ii)(AA) and (BB) of this rule apply also to establishment of criteria for toxic pollutants lacking national criteria.
- b. Site-Specific Criteria. Site-specific criteria alternative to applicable statewide criteria and reflecting circumstances different from or unaddressed by the statewide criteria may be adopted by the Board as part of a waste discharge license proceeding, pursuant to 38 M.R.S.A. Sections 413, 414, 414-A, and 420. Any site-specific criteria adopted must protect designated uses equally as well as applicable statewide criteria. However, the discharger must also provide the Department with a thorough literature search of the properties of the toxicant, including but not limited to, its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation, and regulation by other states or foreign countries. In addition to the following minimum requirements, the Board may incorporate any other information shown to be pertinent in determining these criteria.
- i. Site-specific criteria for toxic substances with national water quality criteria
- AA. Aquatic Life Criteria
- (1) A plan of study must be submitted to the Department for review and approval prior to initiation of testing. Methods follow those specified in subsection E. of this rule.
 - (2) Minimum requirements include toxicity tests conducted generally according to the most recent USEPA Water Quality Standards Handbook and Water-effect Ratio Guidance.
 - (3) Both acute and chronic tests must be conducted quarterly for at least one year. Receiving water should not be collected for use during floods or immediately after significant storm events.
 - (4) For complex effluents with more than one potentially toxic pollutant, both dilution waters (receiving water and laboratory water) must be spiked with all pollutants present in the effluent in significant amounts, except the pollutant of interest, or the whole effluent at levels representative of the calculated receiving water concentrations (RWC) at the appropriate design flow. Pollutants present in

significant amounts relative to toxic levels must be determined by means of at least four priority pollutant scans within two years of submitting the plan of study to the Department. The pollutant of interest must be added at various concentrations bracketing the target concentration (the existing or desired license limit) to determine an appropriate site-specific criterion. This procedure must be repeated for each pollutant for which site-specific criteria are to be proposed.

- (5) For discharges to freshwater, the water flea (*Ceriodaphnia dubia*) reproductive and survival test, and the brook trout (*Salvelinus fontinalis*), or other salmonid approved by the Department, survival and growth tests must be conducted. For discharges to marine waters, Mysid shrimp (*Mysidopsis bahia*) survival test, Inland Silverside (*Menidia beryllina*) 7-day larva survival and growth test, and the sea urchin (*Arbacia punctulata*) fertilization test must be conducted.
- (6) Results should be based on measured concentrations.
- (7) For heavy metal tests, the metal must be added in the form of inorganic salts of relatively high solubility, such as nitrate salts or in some cases, chloride or sulfate salts.

BB. Human Health Criteria. Requirements are the same as in subsection A(2)(a)(ii)(BB) of this rule.

- ii. Site-specific criteria for toxic substances lacking national criteria

AA. Aquatic Life Criteria. Requirements are the same as in subsection A(2)(b) of this rule.

BB. Human Health Criteria. Requirements are the same as in subsection A(2)(a)(ii)(BB) of this rule.

B. WET Testing and Chemical-Specific Testing for Toxic Pollutants

- 1. Dischargers Subject To This Subsection.** All licensed industrial dischargers of process wastewater, as defined under NPDES regulations, and all publicly operated treatment works (POTWs) discharging to surface waters must meet the requirements of this subsection. Dischargers of other types of wastewater are subject to this subsection when and if the Department determines that toxicity of effluents may cause or have reasonable potential to cause or contribute to exceedences of narrative or numerical water quality criteria.

- 2. Notice Of Testing And General Requirements**

- (a) In order to characterize the effluent discharged for purposes of renewing waste discharge licenses, all subject dischargers must carry out a toxicity testing program consisting of screening tests and surveillance tests according to the schedule set forth in this and the following subsections. This testing program must be conducted on effluents representative of normal operating conditions.

- (b) Screening tests must be performed during the year preceding each application for license renewal. Dischargers with licenses pending renewal or expiring within one year before the filing of this rule must begin toxicity testing within 90 days of the effective date of this rule and complete all testing requirements unless otherwise specified by the Department. All relevant data available must be submitted at time of application. All remaining data necessary for completion of the required program must be submitted within 30 days of collection unless otherwise specified by the Department. In order to ensure compliance with 38 M.R.S.A. Section 420, all other dischargers must begin testing within 90 days of notification by the Department or one year prior to license expiration and submit all data applicable to this rule within 30 days of the completion of the required toxicity testing.
 - (c) Where screening tests demonstrate that a discharge does not cause, have a reasonable potential to cause or contribute to an excursion exceeding a numerical or narrative water quality criterion [see subsection D(2)], surveillance tests will be conducted until screening tests are repeated prior to the next license renewal.
 - (d) Those dischargers whose licenses are pending renewal or whose licenses expire in less than one year from the effective date of this rule may be credited for tests done in accordance with USEPA or Department protocols in the three year period preceding the screening testing required in subsection B(6) in the following manner:
 - i. Acute tests may be credited for acute test requirements and chronic tests credited for chronic test requirements;
 - ii. LC50 acute WET tests may be credited toward required chronic tests on the same species if the test result (in percent effluent) exceeds the chronic receiving water concentration (in percent effluent) by a factor of 10 or more;
 - iii. NOEL acute WET tests may be credited toward required chronic tests on the same species if the test result (in percent effluent) exceeds the chronic receiving water concentration by a factor of 3 or more.
 - (e) Crediting for Sludge Priority Pollutant data. The Department may allow credit for testing of organic priority pollutants conducted on sludge generated by a waste treatment facility. In doing so, the Department will take into consideration physical characteristics including solubility, volatility and partitioning between aqueous and solid phases to determine for which compounds sludge testing is a reliable indicator of their presence in the effluent. Where it is determined that sludge is a reliable indicator and compounds are not found in significant concentrations they will be assumed to be absent in the effluent, and the next required effluent testing will be waived. In cases where compounds are detected in the sludge, effluent testing shall be conducted as required. In order for sludge testing to be credited, it must be conducted with approved methods on fresh sludge that is representative of that produced by the facility.
- 3. Testing Frequency for Licensed Discharges.** The basis of this categorization is the relative risk of toxic contamination of receiving water by a discharge. Dilution of the discharge in the receiving water is the primary variable used to determine the testing frequency. In specific cases, the nature of the wastewater itself, its volume, the level or type of treatment, or the nature of the receiving water may modify the testing frequency based on simple dilution.

a. Whole Effluent Toxicity (WET) Testing Frequency

Discharges specified below must be tested at the stated frequency.

i. HIGH FREQUENCY:

AA. All industrial discharges of process wastewaters;

BB. POTWs with a dilution ratio of less than 20:1;

CC. POTWs that have been required by USEPA to adopt pretreatment programs;

DD. POTWs that receive 10% or more of their average daily flow from sources for which pretreatment standards have been promulgated by the USEPA; and

EE. POTWs with unresolved toxicity problems associated with their discharge.

ii. MEDIUM FREQUENCY: Discharges that do not fall into the high testing frequency group but do meet either of the following descriptions:

AA. POTWs with a dilution ratio greater than 20:1 but less than 100:1; or

BB. POTWs that receive greater than zero but less than 10% of their average daily flow from sources for which pretreatment standards have been promulgated by the USEPA.

iii. LOW FREQUENCY: Discharges are POTWs with a dilution factor greater than 100:1 and free of defining characteristics of discharges in the high or medium frequency groups.

b. Chemical Testing Frequency. Discharges specified below must be tested at the stated frequency.

i. HIGH FREQUENCY:

AA. Industrial discharges of process wastewaters;

BB. POTWs that discharge more than 1.0 million gallons of wastewater per day;

CC. POTWs that receive 10% or more of their average daily flow from sources for which pretreatment standards have been promulgated by the USEPA;

DD. POTWs that have been required by USEPA to adopt a pretreatment program; and

EE. POTWs with unresolved toxicity problems associated with their discharge.

ii. MEDIUM FREQUENCY: Discharges that do not fall into the high frequency group but meet the following description:

POTWs that receive greater than zero but less than 10% of their average daily flow from sources for which pretreatment standards have been promulgated by the USEPA.

iii. LOW FREQUENCY: Discharges that do not fall into the high or medium groups.

4. Test organisms

a. Marine. Test species for discharges to marine waters are Inland Silverside, *Menidia beryllina* (acute and chronic), Mysid shrimp, *Mysidopsis bahia* (acute only), and the sea urchin, *Arbacia punctulata*, (chronic only).

b. Freshwater

i. Test species for freshwater are the waterflea and either trout or fathead minnows as determined below.

ii. Where more than one test per year is required, half of the fish tests must be conducted with fathead minnows and half with trout.

iii. Where only one test per year is conducted the species used must be:

AA. Trout for the low and medium WET testing frequencies.

BB. Fathead Minnows for the high WET testing frequency, until USEPA accepts the trout chronic test, after which trout will be used exclusively.

5. Chemical Specific Testing

a. Chemical specific testing refers to analysis for levels of priority pollutants (promulgated according to Section 307 (a) of the CWA) in a licensed discharge.

b. Chemical specific analyses for toxic pollutants in addition to the priority pollutants will also be required if the Department has reason to believe that specific discharges contain such compounds in concentrations that may prevent attainment of water quality standards of the waterbody (38 M. R. S. A. Section 464(4)(A)(4)).

c. All chemical-specific testing must be carried out by methods that permit detection of a pollutant at existing levels in the discharge or that achieve minimum levels of detection as specified by the Department.

d. Whenever WET tests and chemical specific tests are both required, tests must be performed on the same sample of effluent.

6. Test Schedules

a. Whole effluent toxicity testing

- i. Screening Tests: Acute and chronic tests are required on each occasion of testing. Tests in the high and medium frequency groups should be spaced equally over the testing period.

Testing Frequency	High	Medium	Low
Number of tests	4/year	2/year	1/year

- ii. Surveillance Tests:

Testing Frequency	High	Medium	Low
Number of tests	1/year	1/year	1/year

- b. Chemical-specific testing:

- i. Screening Tests: Tests in the high and medium frequency group must be spaced equally over the testing period.

Testing Frequency	High	Medium	Low
Number of tests	4/year	2/year	1/year

- ii. Surveillance tests:

Testing Frequency	High	Medium	Low
Number of tests	1/year	1/year	1/year

- 7. Reduced Testing Frequencies and Waivers from Testing Requirements.** Under conditions specified in this subsection, the Department will review requests for reducing the frequency of toxicity testing. All requests must be made prior to the initiation of screening tests unless specified below.

- a. Reduced Testing of Industrial Discharges. The Department may reduce the testing requirements of subsection B. of this rule and replace them with testing adequate to characterize the toxicity of known pollutants when the discharger provides information adequate to:
 - i. Identify all the toxic pollutants used in its processes;
 - ii. Demonstrate that all chemicals used in or formed by the discharger's industrial processes are not known or suspected to result in the formation of toxic pollutants in toxic amounts; and
 - iii. Demonstrate that the facility does not process or treat waters known or suspected to contain toxic pollutants in toxic amounts.

- b. Waiver of Testing of Industrial Discharges. The Department may waive all testing requirements when the discharger provides information adequate to demonstrate that:
 - i. No toxic pollutants are used in its processes in toxic amounts;
 - ii. Chemicals used in or formed by the discharger's industrial processes are not known or suspected to result in the formation of toxic pollutants in toxic amounts;
 - iii. The facility does not process or treat waters known or suspected to contain toxic pollutants.
- c. Reduced Testing of Municipal Discharges. The Department may reduce the testing requirements of subsection B of this rule if specific conditions of this subsection are met. To determine this, the Department shall send a notice and questionnaire to each discharger after the third license year, and the licensee will have 30 days to supply information demonstrating that:
 - i. The POTW has not been required by USEPA to adopt a pretreatment program nor does it receive 10% or more of its average daily flow from sources for which pretreatment standards have been promulgated by USEPA;
 - ii. The POTW has completed all required screening tests and subsequent surveillance tests of the last 5 years, pursuant to subsection B(6) of this rule, and the testing demonstrates no exceedence or reasonable potential of exceedence of the limits of these tests; and
 - iii. The POTW demonstrates that none of the following has occurred since the previous screening tests:
 - AA.Increases in the number, types and flows of industrial, commercial, or domestic discharges to the facility that in the judgment of the Department may cause the receiving water to become toxic;
 - BB.Changes in the condition or operation of the facility that may increase the toxicity of the discharge;
 - CC.Changes in stormwater collection or infiltration/inflow affecting the facility that may increase the toxicity of the discharge; or
 - DD.Increases in the type or volume of hauled wastes accepted by the facility.
- d. Exemption of Certain Municipal Discharges, Commercial Discharges, and Domestic Discharges from Testing. The following discharges are exempt from testing requirements in the absence of evidence indicating that the discharge contains toxic pollutants in toxic amounts:
 - i. Discharges from schools;

- ii. Discharges from facilities licensed to discharge less than 50,000 gallons per day of domestic wastewater, provided no holding tank wastes containing chemicals are accepted by the facility.
- iii. Discharges from publicly owned treatment works which are not classified by USEPA as major and which discharge to receiving waters with a dilution ratio of at least 1000:1, provided that the POTW receives no process wastes from sources for which pretreatment standards have been promulgated by the USEPA; and
- iv. Discharges from combined sewer overflow discharge points, provided the owner of the sewerage system is conducting or participating in a pollution abatement program.

C. Water Quality-based Effluent Limits for Waste Discharge Licenses

1. **Limits Required.** The Department shall establish appropriate discharge prohibitions, effluent limits and monitoring requirements in waste discharge licenses as needed to control the level of toxic pollutants in surface waters. The Department shall use its authority pursuant to Section 401(a) of the Clean Water Act, as amended, to require that NPDES permits issued by USEPA contain appropriate discharge prohibitions, effluent limits, and monitoring requirements to control the level of toxic pollutants in surface waters. Appropriate water quality based effluent limits must be established in the license if a discharge contains pollutants that are, or may be discharged at levels that cause, have a reasonable potential to cause, or contribute to an ambient excursion in excess of a numeric or narrative water quality criterion. The license must also control whole effluent toxicity when discharges cause; have a reasonable potential to cause or contribute to an ambient excursion above the narrative water quality criterion. The whole effluent toxicity limit is the no observed effect level (NOEL). The NOEL (in percent effluent) must be greater than the receiving water concentrations (RWC), in percent effluent, at the appropriate design flows for both acute (A) and chronic (C) exposures.

A-NOEL>A-RWC

C-NOEL>C-RWC

NOTE: State and Federal water pollution control laws also specify independently applicable technology-based effluent standards to abate discharges of pollutants.

2. **Determination of Reasonable Potential to Exceed Receiving Water Quality Criteria.** The Department shall apply the statistical approach in Section 3.3.2 and Table 3-2 of USEPA's "Technical Support Document for Water Quality-based Toxics Control" (USEPA/505/2-90-001) to data to determine whether water-quality based effluent limits must be included in a waste discharge license. Where it is determined through this approach that a discharge contains pollutants at levels that have a reasonable potential to cause or contribute to an ambient excursion in excess of a numeric or narrative water quality criterion, appropriate water quality-based limits must be established in the license upon issuance. The Department will also evaluate the following factors to determine the need for water quality-based limitations upon relicensing:
 - a. For industrial discharges: existing controls on point source and nonpoint source pollution, raw materials, processes, products, best management practices, wastewater treatment; for POTW discharges: existing controls on point source and nonpoint source pollution, significant indirect discharges, pretreatment, treatment processes and efficiency of treatment;

- b. Effluent monitoring data and the variability of the pollutant in the effluent: in characterizing effluent quality, the Department will use the statistical approach in Section 3.3.2 and Table 3-2 of EPA's "Technical Support Document for Water Quality-based Toxics Control" EPA/505/2-90001 to determine representative effluent concentrations for dischargers who have completed the testing required under subsection C.
- c. Receiving water quality, including classification and ambient data;
- d. Total maximum daily load and wasteload allocations for the waterbody; and
- e. Dilution of the effluent in the receiving water.

3. Determination of Exceedence of Criteria. The Department will review all testing data as received. If these data indicate that the discharge is causing an exceedence of applicable water quality criteria, then: (1) the Department must notify the licensee of the exceedence; (2) the licensee must submit a toxics reduction evaluation (TRE) plan for review and approval within 30 days of receipt of notice and implement the TRE after Department approval; (3) the Department must modify the waste discharge license to specify effluent limits and monitoring requirements necessary to control the level of pollutants and meet receiving water classification standards within 180 days of the Department's approval of the TRE.

D. Water Quality-based Effluent Limit Derivation. Water quality-based limits must be developed by one or both of the following procedures.

- 1. Specific pollutant approach.** When specific toxic pollutants of known action and interaction are identified in a discharge or potential discharge, the water quality-based effluent limit is determined by use of the applicable numerical water quality criteria for the pollutants and the appropriate dilution described in subsection E(3) below.
- 2. Whole effluent approach.** When the existing or proposed discharge contains two or more pollutants whose actions or interactions are unknown or when toxic components cannot be identified, WET effluent limits may be required for the protection of aquatic life. The "acute no observed effect level" (A-NOEL) and the "chronic no observed effect level" (C-NOEL), expressed as percent effluent, must be greater than the actual receiving water concentrations (% of effluent in receiving water at the appropriate stream design flow).

Note that the receiving water concentration is the inverse of the dilution factor.

- 3. Calculation of dilution factors:** A simple dilution model using stream design flows specified in subsection E(4) of this rule must be used to determine allowable effluent limits unless there is information that makes another model approved by the Department more appropriate. All substances are assumed to be conservative. Background concentrations will be included in all calculations, using available site data or other data appropriate for the region.
- a. Dilution factors (DF) for freshwater discharges are calculated using the following models:

- i. If the entire water supply that ultimately makes up the effluent flow (Q_e) is taken from the receiving water upstream of the location from which the stream design flow (Q_r) is calculated or measured, then:

$$DF = Q_r/Q_e$$

- ii. If part or all of the water supply taken from any other location (Q_o) is discharged in the effluent, then:

$$DF = (Q_r + Q_o)/Q_e$$

- b. For estuarine and marine discharges, dilution factors (DF) are calculated as follows.

- i. For discharges to the ocean, dilution must be calculated as near-field or initial dilution, or that dilution available as the effluent plume rises from the point of discharge to its trapping level, at mean low water level and slack tide for the acute exposure analysis, and at mean tide for the chronic exposure analysis using appropriate models determined by the Department such as MERGE or CORMIX. Where far-field impacts on sensitive resources such as swimming beaches or clam flats are a concern, other appropriate methods estimating far-field dilution must be used.
- ii. For discharges to estuaries, dilution must be calculated using a method determined by the Department to be appropriate for the site conditions. Where freshwater river flow is dominant and instantaneous mixing across the width can be assumed, dilution must be calculated as in subsection E(3)(a). Where tidal flow is dominant or incomplete mixing is assumed, dilution must be calculated as in subsection E(3)(b)(i). Where appropriate, other methods such as dye studies or water quality methods may be used.

4. Stream design flows. Stream design flows used in the analyses of dilution factors from dilution models must be consistent with the exposure of the population at risk to any and all toxic pollutants.

- a. Analyses using numerical acute criteria for aquatic life must be based on 1/4 of the 1Q10 stream design flow to prevent substantial acute toxicity within any mixing zone, according to EPA's Mixing Zone Policy and to ensure a Zone of Passage of at least 3/4 of the cross-sectional area of any stream as required by Department rule. Where it can be demonstrated that a discharge achieves rapid and complete mixing with the receiving water, by way of an efficient diffuser or other effective method, analyses may use a greater proportion of the stream design flow, up to and including all of it, as long as the required Zone of Passage is maintained. Flows that allow bioaccumulation of compounds to levels that are carcinogenic, mutagenic or teratogenic are not to be used in setting effluent limits.
- b. Analyses using statewide numerical chronic criteria for aquatic life must be based on 7Q10 stream design flow.
- c. Analyses using human health criteria must be based on stream flows consistent with the duration of exposure.

- E. WET Testing Procedures.** Toxicity tests must be conducted by an experienced laboratory approved by the Department. The laboratory must follow the procedures described in the latest editions of the following USEPA methods manuals, except as modified by the Department on a case by case basis or as described in this section for the Salmonid Survival and Growth Test.

1. EPA Methods Manuals

Weber, C.I. et al., 1988. "Short Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Marine and Estuarine Organisms". Office of Research and Development, USEPA, Cincinnati, Ohio. (USEPA/600/4-87/028)

Weber, C.I. et al., 1988. "Short Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms" (Second edition). Office of Research and Development, USEPA, Cincinnati, Ohio. USEPA 600/4-89/001.

Weber, C.I.(ed.) 1991. "Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms" (Fourth Edition) Office of Research and Development, USEPA, Cincinnati Ohio, USEPA 600/4-90/027.

- 2. Salmonid Survival and Growth Test.** The Salmonid survival and growth test must follow the procedures for the fathead minnow larval survival and growth tests detailed in USEPA's freshwater acute and chronic methods manuals (see references above) with the following modifications:

Species - Brook Trout, *Salvelinus fontinalis*, or other salmonid approved by the Department.

Age - Less than six months old for the first test each year and less than twelve months for subsequent tests.

Size - The largest fish must not be greater than 150% of the smallest.

Loading Rate - < 0.5 g/l/day

Feeding rate - 5% of body weight 3 times daily (15%/day)

Temperature - $12^{\circ} \pm 1^{\circ}\text{C}$

Dissolved Oxygen - 6.5 mg/l ,aeration if needed with large bubbles (> 1 mm diameter) at a rate of <100/min

Dilution Water - Receiving water upstream of discharge (or other ambient water approved by the Department)

Dilution Series - A minimum of 5 effluent concentrations (including the instream waste concentration at 7Q10 river flow and monthly average discharge flow limit for chronic test, and 1Q10 river flow and daily maximum discharge flow for acute test); a receiving water control; and control of known suitable water quality

Exception - Where license limits exceed 100% (LC50>100%, NOEC>100%, etc.) an undiluted (100%) effluent concentration may be used instead of the 5 dilutions

Duration - Acute = 48 hours

- Chronic = 10 days minimum

Test acceptability - Acute = minimum of 90% survival in 2 days

- Chronic = minimum of 80% survival in 10 days; minimum growth of 20 mg/gm/d dry weight in controls, (individual fish weighed, dried at 100°C to constant weight and weighed to 3 significant figures)

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